

MEMORANDUM

TO: File No. 4-610

FROM: Alicia Goldin, Division of Trading and Markets

DATE: June 26, 2012

RE: Meeting with Representatives of Interactive Data Corp. (IDC)

On March 1, 2012, the following representatives of IDC:

- Andrew Kramer, Senior Director, Corporate Development & Investor Relations
- Elizabeth Duggan, Managing Director, Evaluations
- Mark Heckert, Senior Director, Evaluations
- Jon Barasch, Director, Municipal Evaluations
- Spencer Gallagher, Senior Director, Reference Data
- Nathan Bouley, Assistant General Counsel
- Mitchell Feuer, Principal, Rich Feuer Group

met with Mary Simpkins, John McWilliams, David Sanchez, Alicia Goldin, David Dimitriou, Tom Eady, and Amar Kuchinad from the Division of Trading and Markets; Jonathan Wilcox from the Division of Enforcement; Amy Starr from the Division of Corporation Finance; Amy Edwards from the Division of Risk, Strategy and Financial Innovation and Heather Clark and Mshyka Davis-Smith from the Office of Compliance, Inspections and Examinations to discuss issues related to the municipal securities market, including issues related to pricing evaluations. IDC provided the attached document following the meeting.

WHITE PAPER

Corporate and Municipal Bond Trading Costs During the Financial Crisis¹

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Eric Zitzewitz, Dartmouth College
August 2010

Abstract

We measure trading costs for large and small trades in corporate and municipal bonds using data from the TRACE and MSRB datasets, and for corporate bonds exploiting the recent addition of a direction of trade variable to TRACE. We find significantly larger trading costs for smaller trades, lower quality bonds, longer duration bonds, and during the “crisis” period of late 2008 and early 2009. We find higher spreads than reported by other studies for earlier time periods.

Introduction

Whereas the study of the execution quality of equity trades has been facilitated by datasets such as the New York Stock Exchange’s Trades and Quotes data, no comparable dataset exists for corporate bonds, which trade largely in a dealer market rather than on an exchange. Many early studies of bond trading used data collected by the National Association of Insurance Commissioners (NAIC), which covered bond trades placed by member insurance companies. This data, while useful, reflected the costs incurred by institutional customers who typically traded large orders.

The development of the FINRA Trade Reporting and Compliance Engine (TRACE) and the Municipal Securities Rulemaking Board (MSRB) datasets for corporate and municipal bonds, respectively, allow one to better study the trading costs to all market participants. The utility of TRACE has also been recently enhanced with the addition of a “reporting party side” variable that discloses whether a trade involved a dealer that was purchasing from a non-dealer client (B), selling to a non-dealer client (S), or trading with another dealer (D). In this note, we use these newer public datasets to estimate trading costs during the financial crisis period, with a particular emphasis on the differing costs incurred in connection with large and small trades.

We find spreads that are significantly larger than those estimated in past work, particularly during the last two months of 2008 and the first half of 2009. During our sample period, the retail-sized (defined as under \$100,000 in face value) corporate bond trades involved median two-way trading costs of 155 basis points (bp), while institutionally-sized trades (greater than or equal to \$500,000 in face value) were 28 bp. For municipal bonds, retail-sized trades involved median two-way costs of 251 bp and institutionally-sized trades were 61 bp. Mean spreads are 1.1-1.5 times larger than median spreads: 207 and 38 bp for corporate bonds and 272 and 92 bp for municipal bonds. Larger trading costs for smaller trades have been found in the past for bonds (Hong and Warga, 2000; Schultz, 2001; Chakravarty and Sarkar, 2003; Harris and Piwowar, 2006) but not equities (e.g., Lin, Sanger, and Booth, 1995).

¹ This paper is a revised version of “Corporate Bond Trading Costs During the Financial Crisis,” which we circulated and presented at the Regional Bond Dealers Association Fixed Income roundtable in June 2010. We thank participants at that meeting for helpful comments. The major change is to add data on municipal bond trading costs.

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The closest prior studies to ours are Edwards, Harris, and Piwowar (2007) and Harris and Piwowar (2006), which estimated trading costs for the TRACE and MSRB samples, respectively, for earlier time periods (January 2003 to January 2005 for corporate bonds; November 1999 to October 2000 for municipal bonds).² For corporate bonds, estimated median two-way spreads range from 66-120 bp for retail-sized and 2-20 bp for institutionally-sized trades (see Edwards, Harris, and Piwowar, Table IV). For municipal bonds, estimated median two-way spreads range from 96-270 basis points for retail-sized trades and 3.2-48 for institutionally-sized trades (see Harris and Piwowar, Table II). Our spreads for more recent time periods (November 2008 to April 2010 for corporate bonds; January 2006 to June 2010 for municipal bonds), estimated using a similar method, are around twice as large. Even if we ignore the peak of the financial crisis in late 2008 and early 2009, we still find substantially higher trading costs than those found by Edwards, Harris, and Piwowar and Harris and Piwowar in the earlier time periods.

Methodology

In this note, we use a simple methodology for measuring effective bid-ask spreads, taking the difference between a dealer-client transaction price and the next large, unpaired, interdealer trade. Following Zitzewitz (2010), we match dealer-client trades with large interdealer trades that are not “paired” with client trades, as these trades are less likely to be buyer or seller-initiated and thus are more likely to reflect the “middle” of the market. To capture any general bond market movements that occur between the dealer-client and the interdealer trade, we adjust bond price changes using the intervening total returns on an appropriate bond market exchange-traded fund (we use MUB for municipal bonds, LQD for investment grade corporate bonds, and JNK for high-yield corporate bonds).³

² Edwards, Harris, and Piwowar (2007) had access to a reporting party side variable in TRACE for their earlier time period. Goldstein, Hotchkiss, and Sirri (2007) also had access to this variable for their study of the BBB-rated corporate bonds that were added to TRACE in 2003 as part of a controlled experiment. Other work on corporate bond trading costs includes Hong and Warga (2000), Schultz (2001), Chakravarty and Sarkar (2003), and Bessembinder, Maxwell, and Venkataraman (2006). These papers use the National Association of Insurance Commissioners (NAIC) data on bond transactions by insurance companies. Bessembinder, Maxwell, and Venkataraman report that the NAIC data accounted for 12.5% of the dollar trading volume on TRACE in the second half of 2002 (p. 263). The studies on NAIC data find smaller trading costs than those reported by Edwards, Harris, and Piwowar and Harris and Piwowar, likely reflecting the exclusively institutional nature of their sample.

³ Edwards, Harris, and Piwowar (2007) and Harris and Piwowar (2006) identify trading costs using a regression that compares bond trading prices with subsequent trades of a different size or direction, adjusting as we do for coupon interest and intervening returns in bond market factors. The main difference is that they impose a functional form for the trading cost-trade size relationship, including imposing symmetry, whereas we allow for more flexibility.

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Results

Tables 1A and 1B present our estimates of trading costs by trade size for corporate and municipal bonds, respectively. Trading costs are approximately symmetric for client buys and sells and decrease in trade size, with the sharpest drop occurring between \$100,000 and \$500,000 in size. Trades below \$100,000 in face value, which we refer to as retail-sized trades, have equal-weighted median two-way spreads of 155 and 251 bp; trades with \$500,000 or more in face value, which we refer to as institutionally-sized trades, have equal-weighted median two-way spreads of 28 and 61 bp. Trades in between these two sizes have equal-weighted median two-way spreads of 74 and 144 bp.

Table 1A. Spreads by Trade Size – Corporate Bonds

Spread is defined as the log percentage point difference between the trade price and the next unpaired interdealer trade, adjusted for intervening changes in the general bond market, as captured by the exchange-traded fund with ticker LQD (for investment-grade) or JNK (for high-yield bonds). TRACE truncates reported trade sizes at \$1 million for high-yield bonds and \$5 million for investment-grade bonds.								
Trade size	Purchases by dealers			Sales by dealers			Two-way spread	
	Bond*days	Mean spread	Median spread	Bond*days	Mean spread	Median spread	Means	Medians
1k	72,781	-1.00	-0.54	67,990	1.38	1.17	2.37	1.71
2-4k	202,246	-0.85	-0.47	185,341	1.13	0.79	1.98	1.26
5-9k	296,606	-0.81	-0.51	548,873	1.31	1.04	2.13	1.54
10-19k	473,734	-0.86	-0.61	1,157,941	1.33	1.09	2.19	1.69
20-49k	514,360	-0.81	-0.58	1,175,644	1.25	1.01	2.06	1.59
50-99k	235,344	-0.66	-0.48	459,539	1.06	0.81	1.73	1.29
100-199k	179,388	-0.46	-0.33	321,068	0.84	0.56	1.30	0.89
200-499k	149,545	-0.26	-0.19	228,852	0.63	0.37	0.89	0.56
500-999k	103,095	-0.13	-0.13	134,221	0.47	0.26	0.60	0.39
1M-1.9M*	266,309	0.02	-0.09	296,988	0.32	0.17	0.30	0.26
2M-4.9M	78,605	-0.02	-0.08	89,514	0.34	0.16	0.36	0.24
5M+ (truncated)	89,483	-0.06	-0.09	85,226	0.26	0.10	0.32	0.20
All < \$100k	1,795,071	-0.82	-0.54	3,595,328	1.26	1.01	2.07	1.55
100-499k	328,933	-0.37	-0.26	549,920	0.75	0.48	1.12	0.74
> \$500k	537,492	-0.03	-0.10	605,949	0.35	0.18	0.38	0.28
Trade size	72,781	-1.00	-0.54	67,990	1.38	1.17	2.37	1.71

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Table 1B. Spreads by Trade Size – Municipal Bonds

Spread is defined as the log percentage point difference between the trade price and the next unpaired interdealer trade, adjusted for intervening changes in the general bond market, as captured by the exchange-traded fund with ticker TFI.

Trade size	Purchases by dealers			Sales by dealers			Two-way spread	
	Bond*days	Mean spread	Median spread	Bond*days	Mean spread	Median spread	Means	Medians
5-9k	30,699	-1.76	-1.48	189,964	1.81	1.83	3.56	3.32
10-19k	98,768	-1.24	-1.06	597,526	1.75	1.73	2.99	2.79
20-49k	177,019	-1.00	-0.85	908,793	1.65	1.61	2.65	2.46
50-99k	110,734	-0.82	-0.68	481,444	1.48	1.43	2.30	2.11
100-199k	97,490	-0.60	-0.46	317,665	1.25	1.14	1.85	1.60
200-499k	68,282	-0.51	-0.41	160,146	0.92	0.74	1.43	1.15
500-999k	32,904	-0.43	-0.36	52,103	0.59	0.36	1.03	0.71
1M-1.9M	19,473	-0.36	-0.31	22,289	0.37	0.16	0.74	0.48
2M+	1,690	-0.33	-0.32	3,082	0.11	0.05	0.43	0.37
All < \$100k	417,220	-1.06	-0.89	2,177,727	1.65	1.62	2.72	2.51
100-499k	165,772	-0.56	-0.44	477,811	1.14	1.01	1.70	1.44
> \$500k	54,067	-0.41	-0.34	77,474	0.51	0.27	0.92	0.61

Tables 2A and 2B examine the relationship between our estimate of spreads and the time delay between the dealer-client and the inter-dealer trade. Estimated spreads are generally slightly larger for the trades that are not accompanied by an inter-dealer trade on the same day. Higher spreads for client trades without a same-day inter-dealer trade may be due to dealers charging higher spreads when they are less likely to quickly find a dealer interested in offsetting the client trade.

Table 2A. Estimated Median Spreads by Time to Next Interdealer Trade – Corporate Bonds

Spread is defined as the log percentage point difference between the trade price and the next unpaired interdealer trade, adjusted for intervening changes in the general bond market, as captured by the exchange-traded fund with ticker LQD (for investment-grade) or JNK (for high-yield bonds).

Days until interdealer trade	Retail-sized trades (under \$100k)				Institutionally-sized (\$500k or more)			
	Dealer buys	Dealer sells	Total	% of bond days	Dealer buys	Dealer sells	Total	% of bond days
Same day	-0.48	0.94	1.41	60.9	-0.13	0.14	0.28	44.1
1	-0.72	1.12	1.84	16.3	-0.11	0.17	0.28	19.2
2	-0.79	1.23	2.02	3.1	-0.04	0.22	0.25	4.7
3	-0.73	1.12	1.86	4.3	-0.08	0.20	0.28	5.0
4	-0.73	1.26	1.98	2.7	-0.04	0.24	0.27	3.9
5	-0.77	1.31	2.08	1.7	-0.02	0.26	0.28	3.0
6	-0.78	1.40	2.18	1.5	0.02	0.27	0.25	2.7
7-13	-0.76	1.47	2.23	3.9	0.06	0.31	0.26	7.3
More than 14	-0.60	1.71	2.32	5.5	0.38	0.63	0.25	10.1
All trades	-0.54	1.01	1.55	100.0	-0.10	0.18	0.28	100.0

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Table 2B. Estimated Median Spreads by Time to Next Interdealer Trade – Municipal Bonds

Spread is defined as the log percentage point difference between the trade price and the next unpaired interdealer trade, adjusted for intervening changes in the general bond market, as captured by the exchange-traded fund with ticker TFI.

Days until interdealer trade	Retail-sized trades (under \$100k)				Institutionally-sized (\$500k or more)			
	Dealer buys	Dealer sells	Total	% of bond days	Dealer buys	Dealer sells	Total	% of bond days
Same day	-0.82	1.70	2.52	32.8	-0.28	0.25	0.54	35.8
1	-1.38	1.65	3.03	20.0	-0.46	0.25	0.71	19.8
2	-1.25	1.55	2.80	6.5	-0.41	0.29	0.70	5.9
3	-1.23	1.53	2.76	6.4	-0.44	0.24	0.68	5.9
4	-1.18	1.52	2.71	5.5	-0.42	0.19	0.61	5.5
5	-1.16	1.54	2.70	4.9	-0.37	0.25	0.62	5.1
6	-1.10	1.52	2.62	5.0	-0.28	0.28	0.56	5.1
7-13	-0.99	1.50	2.49	17.6	-0.19	0.41	0.59	15.8
More than 14	-1.14	1.40	2.55	1.3	-0.10	0.51	0.61	1.1
All trades	-0.89	1.62	2.51	100.0	-0.34	0.27	0.61	100.0

Tables 3A and 3B examine trading costs for subsamples of our data. Both retail and institutional trading costs are clearly higher for lower-credit-quality issues, with the most significant differences being between AAA and AA-rated corporate debt and BBB and BB-rated municipal debt. The AAA-AA corporate spread difference is most pronounced during the first five months of our sample (November 2008 to March 2009), and thus is likely related to the financial crisis creating uncertainty about all but the most highly rated debt. Trading costs are higher during the last half of 2008 and the first half of 2009; costs for institutional-sized trades rise much more in proportional terms than they do for retail-sized trades. Trading costs are higher for longer-dated bonds, as one might expect given that a given cost as a percentage of the bond prices implies a smaller impact on yield for a long-dated bond. Costs are also lower during the first year after issuance. Spreads are also slightly larger for smaller and less frequently traded corporate bond issues, although the relationship is reversed for municipal bonds, and the relationship for corporate bonds is much less pronounced than the differences in trading costs for large and small-capitalization equities.

Table 3A. Median Spreads for Subsamples of the Data – Corporate Bonds

This table reports median spreads, estimated as described in Tables 1 and 2, for subsamples of trades. Figures exclude trades with more than a 2 day delay until the next interdealer trade, but the cross-sectional differences in median spreads that include these trades are similar.

	% of bond days	Retail-sized trades (under \$100k)			Institutionally-sized trades (\$500k or more)		
		Dealer buys	Dealer sells	Total spread	Dealer buys	Dealer sells	Total spread
By S&P® rating							
AAA	4%	-0.27	0.79	1.07	-0.08	0.07	0.14
AA	13%	-0.47	0.86	1.33	-0.13	0.13	0.26
A	39%	-0.47	0.96	1.43	-0.13	0.18	0.31
BBB	26%	-0.58	1.00	1.58	-0.14	0.14	0.28
BB	6%	-0.76	1.09	1.86	-0.19	0.13	0.32
B	10%	-0.76	1.13	1.89	-0.12	0.21	0.33
C or lower	4%	-0.27	0.79	1.07	-0.08	0.07	0.14
By quantity traded in prior calendar month							
Top decile	59%	-0.48	0.97	1.45	-0.11	0.14	0.26
2nd	17%	-0.49	0.91	1.40	-0.14	0.21	0.35
3rd	8%	-0.54	0.97	1.52	-0.16	0.22	0.39
4th	5%	-0.63	1.01	1.64	-0.20	0.22	0.42
5th	9%	-0.80	1.01	1.81	-0.28	0.24	0.52
Below median	2%	-0.81	0.78	1.58	-0.26	0.13	0.39
By maturity year							
Under one year	6%	-0.33	0.31	0.64	-0.03	0.18	0.22
1-2 years	10%	-0.46	0.52	0.98	-0.10	0.15	0.26
2-5 years	36%	-0.46	0.77	1.24	-0.14	0.14	0.28
5-10 years	33%	-0.62	1.27	1.88	-0.19	0.11	0.30
10-15 years	3%	-0.67	1.44	2.11	-0.11	0.12	0.23
15-20 years	3%	-0.76	2.07	2.83	-0.05	0.49	0.54
20-25 years	2%	-0.88	2.29	3.17	-0.05	0.60	0.64
25 or more years	6%	-0.69	2.53	3.22	-0.04	0.30	0.35
By bond type							
Corporate debenture	72%	-0.49	0.97	1.46	-0.16	0.13	0.29
Corporate medium-term note	16%	-0.51	0.89	1.40	-0.13	0.14	0.27
Retail note	6%	-0.91	1.07	1.98	Insufficient data		
Convertible	4%	-0.28	1.12	1.40	-0.09	0.33	0.41
Other	2%	-0.77	1.28	2.05	-0.15	0.11	0.25

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Table 3A. Median Spreads for Subsamples of the Data – Corporate Bonds *continued*

	% of bond days	Retail-sized trades (under \$100k)			Institutionally-sized trades (\$500k or more)		
		Dealer buys	Dealer sells	Total spread	Dealer buys	Dealer sells	Total spread
Age of bond							
First three months of issue	8%	-0.39	1.01	1.40	-0.16	0.03	0.19
Rest of first year	11%	-0.39	0.96	1.35	-0.12	0.09	0.21
Second year	16%	-0.50	1.15	1.66	-0.14	0.17	0.31
Years 3-5	32%	-0.53	1.00	1.54	-0.12	0.22	0.34
Years 6-10	29%	-0.50	0.78	1.28	-0.12	0.25	0.36
Years 11-15	2%	-0.90	1.45	2.36	-0.03	0.60	0.63
15 or more years since issue	1%	-0.86	0.96	1.82	-0.25	0.46	0.71
By amount outstanding							
Over \$1 billion	43%	-0.43	1.00	1.44	-0.09	0.13	0.23
\$100M - \$1B	52%	-0.59	0.99	1.59	-0.19	0.16	0.35
\$10M - \$100M	4%	-0.98	1.09	2.07	-0.27	0.33	0.60
Under \$10 Million	1%	-0.97	0.93	1.90	-0.17	0.23	0.40
By quarter							
2008 Nov-Dec	9%	-0.70	0.92	1.62	-0.34	0.21	0.55
2009Q1	20%	-0.63	0.99	1.63	-0.31	0.14	0.45
2009Q2	23%	-0.64	0.99	1.63	-0.23	0.14	0.37
2009Q3	19%	-0.54	0.94	1.49	-0.10	0.20	0.29
2009Q4	13%	-0.46	0.94	1.40	-0.06	0.16	0.22
2010Q1	17%	-0.47	0.97	1.44	-0.06	0.12	0.18
2010 April	6%	-0.40	0.93	1.33	-0.06	0.11	0.17

Table 3B. Median Spreads for Subsamples of the Data – Municipal Bonds

This table reports median spreads, estimated as described in Tables 1 and 2, for subsamples of trades. Figures exclude trades with more than a 2 day delay until the next interdealer trade, but the cross-sectional differences in median spreads that include these trades are similar.							
	% of bond days	Retail-sized trades (under \$100k)			Institutionally-sized trades (\$500k or more)		
		Dealer buys	Dealer sells	Total spread	Dealer buys	Dealer sells	Total spread
By Moody's® rating							
Aaa	8%	-0.75	1.54	2.29	-0.24	0.25	0.48
Aa	54%	-0.80	1.55	2.34	-0.32	0.27	0.59
A	28%	-0.95	1.70	2.65	-0.39	0.38	0.76
Bbb	9%	-1.00	1.78	2.77	-0.43	0.44	0.87
Bb or lower	2%	-1.21	1.84	3.05	-0.43	0.79	1.23

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Table 3B. Median Spreads for Subsamples of the Data – Municipal Bonds *continued*

	% of bond days	Retail-sized trades (under \$100k)			Institutionally-sized trades (\$500k or more)		
		Dealer buys	Dealer sells	Total spread	Dealer buys	Dealer sells	Total spread
By Moody's rating							
Aaa	8%	-0.75	1.54	2.29	-0.24	0.25	0.48
Aa	54%	-0.80	1.55	2.34	-0.32	0.27	0.59
A	28%	-0.95	1.70	2.65	-0.39	0.38	0.76
Bbb	9%	-1.00	1.78	2.77	-0.43	0.44	0.87
Bb or lower	2%	-1.21	1.84	3.05	-0.43	0.79	1.23
By quantity traded in prior calendar month							
Top decile	67%	-0.97	1.76	2.73	-0.35	0.53	0.88
2nd	10%	-0.81	1.45	2.26	-0.31	0.40	0.71
3rd	6%	-0.79	1.44	2.23	-0.31	0.35	0.67
4th	18%	-0.79	1.49	2.29	-0.36	0.35	0.71
5th or below	10%	-0.88	1.56	2.44	-0.34	0.43	0.77
Not traded prior month	18%	-0.33	1.42	1.75	-0.27	0.10	0.37
By years to maturity							
Under one year	0%	-0.26	0.10	0.35	-0.04	0.10	0.14
1-2 years	1%	-0.54	0.29	0.83	-0.15	0.15	0.31
2-5 years	6%	-0.62	0.49	1.11	-0.18	0.16	0.34
5-10 years	15%	-0.69	0.93	1.62	-0.27	0.21	0.47
10-15 years	15%	-0.93	1.36	2.29	-0.41	0.31	0.72
15-20 years	19%	-1.08	1.68	2.76	-0.50	0.52	1.02
20-25 years	18%	-1.08	1.91	3.00	-0.47	0.63	1.10
25 or more years	26.3%	-1.18	2.02	3.20	-0.41	0.50	0.92
By tax status							
Income and AMT tax-free	83%	-0.86	1.58	2.44	-0.33	0.28	0.61
AMT taxable	8%	-1.05	1.99	3.03	-0.48	0.43	0.91
Taxable	9%	-0.93	1.64	2.57	-0.43	0.10	0.53
Age of bond							
Before issue date	10%	-0.26	0.10	0.35	-0.04	0.10	0.14
0-3 months	10%	-0.54	0.29	0.83	-0.15	0.15	0.31
3-12 months	13%	-0.62	0.49	1.11	-0.18	0.16	0.34
1-2 years	16%	-0.69	0.93	1.62	-0.27	0.21	0.47
2-5 years	32%	-0.93	1.36	2.29	-0.41	0.31	0.72
5-10 years	13%	-1.08	1.68	2.76	-0.50	0.52	1.02
10-15 years	5%	-1.08	1.91	3.00	-0.47	0.63	1.10
15 years or more	1%	-1.18	2.02	3.20	-0.41	0.50	0.92

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Table 3B. Median Spreads for Subsamples of the Data – Municipal Bonds *continued*

	% of bond days	Retail-sized trades (under \$100k)			Institutionally-sized trades (\$500k or more)		
		Dealer buys	Dealer sells	Total spread	Dealer buys	Dealer sells	Total spread
By amount outstanding							
Over \$1 billion	2%	-1.01	2.11	3.11	-0.16	0.10	0.26
\$100M - \$1B	18%	-1.01	1.87	2.88	-0.29	0.45	0.75
\$10M - \$100M	57%	-0.91	1.64	2.56	-0.35	0.31	0.66
Under \$10 Million	23%	-0.74	1.30	2.04	-0.34	0.19	0.53
By state, ranked by total amount outstanding							
CA	17%	-0.88	1.64	2.52	-0.32	0.33	0.65
NY	14%	-0.95	1.54	2.49	-0.30	0.30	0.60
TX	5%	-0.79	1.54	2.33	-0.30	0.36	0.67
FL	7%	-0.96	1.63	2.58	-0.46	0.36	0.83
IL	3%	-0.76	1.72	2.48	-0.35	0.20	0.55
Ranked 6-15	29%	-0.87	1.58	2.45	-0.34	0.26	0.60
Ranked 16-30	19%	-0.90	1.69	2.59	-0.35	0.19	0.54
Ranked 31-45	5%	-0.89	1.68	2.57	-0.35	0.21	0.56
Ranked 46-55	1%	-1.00	1.79	2.78	-0.32	0.25	0.57
By use of funds							
General purpose	25%	-0.83	1.41	2.24	-0.29	0.25	0.54
Education	19%	-0.79	1.60	2.40	-0.36	0.25	0.61
Transportation	16%	-0.92	1.69	2.61	-0.29	0.30	0.60
Utilities	15%	-0.83	1.64	2.47	-0.33	0.29	0.62
Health care	10%	-1.02	1.78	2.80	-0.49	0.25	0.74
Housing	5%	-1.13	1.94	3.07	-0.51	0.38	0.89
Environmental/public services	4%	-0.94	1.66	2.60	-0.36	0.25	0.61
Economic development	3%	-1.05	1.80	2.85	-0.42	0.44	0.86
Public buildings	3%	-0.80	1.53	2.34	-0.38	0.25	0.63
Recreation	1%	-1.05	1.74	2.79	-0.42	0.31	0.72
By time period							
2006H1	5%	-0.84	1.52	2.35	-0.14	0.35	0.49
2006H2	4%	-0.86	1.28	2.14	-0.20	0.16	0.36
2007H1	5%	-0.63	1.51	2.14	-0.13	0.29	0.42
2007H2	7%	-0.62	1.64	2.26	-0.26	0.26	0.52
2008H1	16%	-0.66	1.65	2.31	-0.36	0.41	0.77
2008H2	13%	-0.89	1.64	2.53	-0.51	0.35	0.85
2009H1	17%	-1.08	1.62	2.70	-0.50	0.29	0.79
2009H2	17%	-1.05	1.60	2.65	-0.39	0.17	0.56
2010H1	16%	-0.98	1.69	2.68	-0.32	0.20	0.52

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Table 4 presents estimates of spreads for 25 individual corporate issues with high ex-ante expected trading volume.⁴ Spreads for retail-sized trades are consistently and significantly larger than those for institutionally-sized trades for all 25 issues. As in Table 3, spreads are larger for lower credit quality and long-dated issues. The overall median spread from these 25 heavily traded bonds is actually slightly larger than the median spread for the entire sample.

Table 4. Retail and Institutional Spreads for 25 Heavily Traded Bonds

Issuer	S&P rating	CUSIP [®]	Maturity	Coupon	Retail-sized trades (less than \$100,000)			Institutionally-sized trades (\$500,000 or more)		
					Dealer buys	Dealer sells	Total spread	Dealer buys	Dealer sells	Total spread
General Electric	AA+	369604BC6	Dec-17	5.25	-0.96	1.24	2.21	-0.38	0.20	0.57
GE Capital	AA+	36962GYY4	Jun-12	6	-0.75	0.60	1.34	-0.20	0.17	0.37
Walmart	AA	931142CK7	Aug-37	6.5	-0.93	2.00	2.93	-0.18	0.21	0.39
Pfizer*	AA	983024AE0	Feb-14	5.5	-0.71	0.64	1.34	-0.14	0.16	0.30
Cisco	A+	17275RAC6	Feb-16	5.5	-0.69	0.63	1.32	-0.29	0.13	0.41
JP Morgan Chase	A+	46625HHF0	May-38	6.4	-0.54	2.71	3.25	-0.34	0.30	0.64
Verizon	A	92344RAA0	Sep-11	6.5	-0.97	0.58	1.55	-0.38	0.13	0.52
Disney	A	25468PBX3	Mar-12	6.375	-0.91	0.51	1.42	-0.22	0.05	0.27
AT&T	A	00206RAG7	Jan-38	6.3	-0.81	2.36	3.17	-0.20	0.09	0.29
HSBC*	A	441812JW5	Oct-11	6.375	-0.78	0.68	1.46	-0.24	0.39	0.63
Goldman Sachs	A	38141GAZ7	Jan-11	6.875	-0.71	0.43	1.15	-0.23	0.17	0.40
Bank of America*	A	59018YJ36	Aug-12	6.05	-1.05	0.86	1.91	-0.22	0.20	0.43
Pepsico	A-	713448BG2	Feb-13	4.65	-0.65	0.48	1.13	-0.31	0.19	0.50
Citigroup	A-	172967CQ2	Sep-14	5	-1.73	1.39	3.13	-0.34	0.43	0.77
Morgan Stanley	A-	61748AAE6	Apr-14	4.75	-1.48	1.17	2.65	-0.31	0.19	0.49
American Express	BBB+	0258M0CY3	Aug-13	7.3	-0.98	0.81	1.80	-0.31	0.22	0.53
Home Depot	BBB+	437076AR3	Dec-13	5.25	-0.79	0.75	1.54	-0.25	0.06	0.32
Vale Overseas	BBB+	91911TAH6	Nov-36	6.875	-1.04	1.20	2.24	-0.02	0.21	0.23
Capital One	BBB	14040HAQ8	Sep-11	5.7	-1.30	0.76	2.06	-0.09	0.71	0.80
Petrobras	BBB-	71645WAM3	Mar-18	5.875	-0.44	1.21	1.65	-0.18	0.01	0.19
Kraft Foods	BBB-	50075NAB0	Nov-11	5.625	-0.52	0.38	0.90	-0.16	0.12	0.28
Ford Motor Company Credit	B-	345397TY9	Oct-11	7.25	-1.38	1.36	2.74	-0.06	0.41	0.47
Ford Motor Company	CCC	345370CA6	Jul-31	7.45	-2.22	2.99	5.21	-0.21	1.28	1.49

⁴ We selected 25 bonds with the highest number of trades reported in TRACE from January 2008 to October 2008. We limited consideration to corporate bonds and medium-term notes, include only the most heavily traded bond from each issuer (or successor firm where the original issuer had been acquired) and exclude Lehman Brothers, which entered into bankruptcy before our sample began.

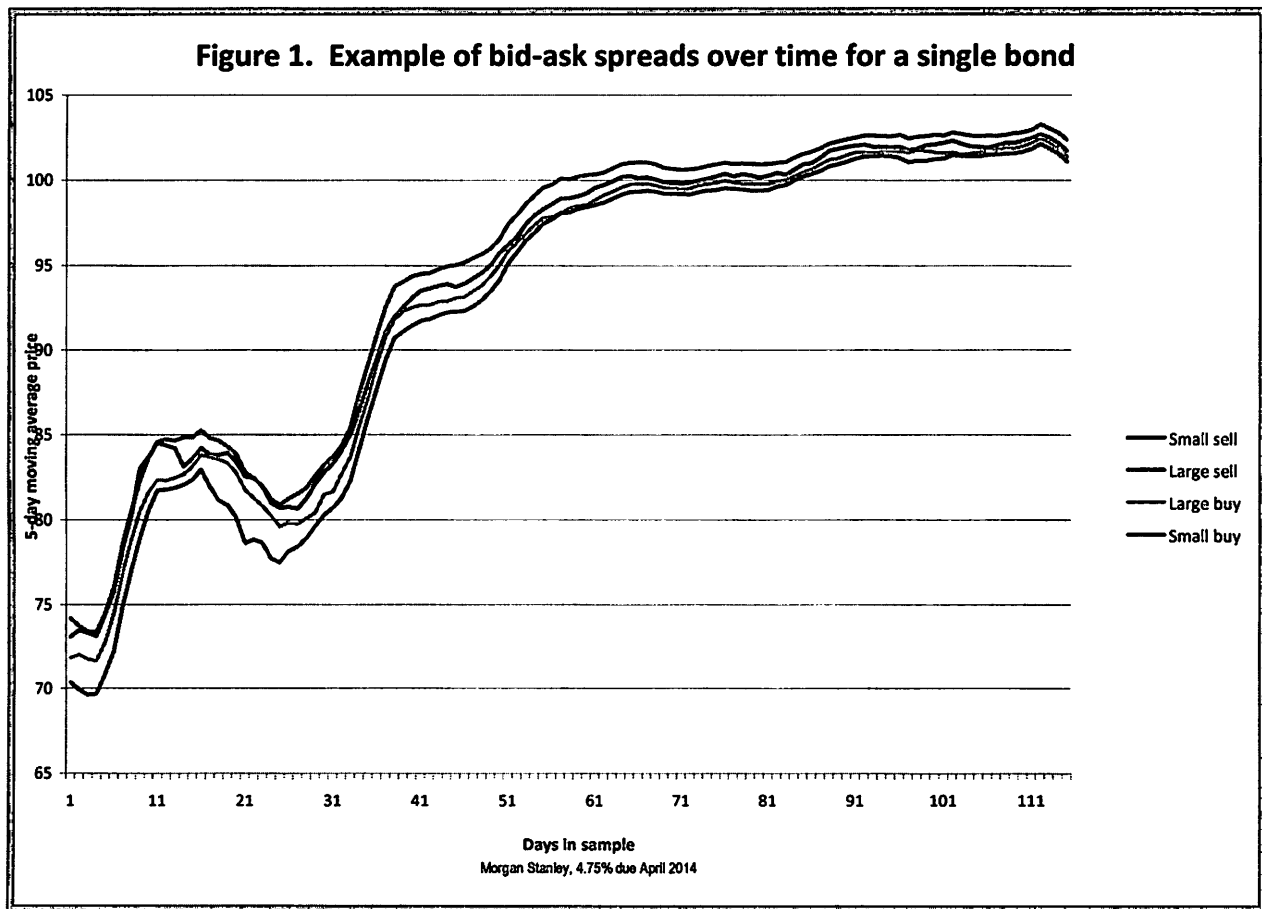
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Table 4. Retail and Institutional Spreads for 25 Heavily Traded Bonds *continued*

Issuer	S&P rating	CUSIP	Maturity	Coupon	Retail-sized trades (less than \$100,000)			Institutionally-sized trades (\$500,000 or more)		
					Dealer buys	Dealer sells	Total spread	Dealer buys	Dealer sells	Total spread
GMAC	NR	370425RP7	Jan-10	7.75	-0.85	0.70	1.55	-0.01	0.55	0.56
General Motors	NR	370442BB0	Jan-11	7.2	-4.88	6.75	11.63	-2.24	2.49	4.74
Median spread for 25					-0.89	0.81	1.70	-0.21	0.21	0.42
Median spread for full sample					-0.54	1.01	1.55	-0.10	0.18	0.28

* Bonds listed were originally issued by Wyeth, Household Finance, and Merrill Lynch, respectively.

Figure 1 provides data for a single bond that exemplifies some of the results mentioned above. Trading costs are consistently higher for small trades than for larger trades. Both small and large-trade costs are higher during the peak of the financial crisis, when the bond traded at lower price levels.



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Conclusions

The TRACE and MSRB datasets have created the ability to study the trading costs to retail as well as institutional market participants. We find that trading costs are higher for smaller trades, for lower credit quality bonds, for longer-dated bonds, and after the first year after issuance. Trading costs were higher during the peak of the financial crisis, which partly explains why we find higher trading costs than prior studies that used the same datasets.

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Limitations

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